

Listing of Claims

The following listing of claims with amendments (if any) replaces all prior versions of claims in the application.

1. (Original) A system for controlling a multiple cylinder internal combustion engine, the system comprising:
 - a feedback controller for controlling an output parameter to reduce a difference between a first desired output parameter value and an actual output parameter value; and
 - a control system monitor for generating a second desired output parameter value, determining a difference between the first desired output parameter value generated by the feedback controller and the second desired output parameter value determined by the control system monitor, applying a weighting factor to the difference to generate a weighted difference, and controlling the engine based on the weighted difference.
2. (Original) The system of claim 1 wherein the first and second desired output parameter values represent engine torque.
3. (Original) The system of claim 1 wherein the control system monitor estimates the second desired output parameter value based on at least engine speed, barometric pressure, and mass airflow.
4. (Original) The system of claim 1 wherein the control system monitor determines a weighting factor based on the difference between the first and second desired output parameter values.
5. (Original) The system of claim 1 wherein the control system monitor determines a weighting factor based on a ratio of the first and second desired output parameter values.

6. (Original) The system of claim 1 wherein the control system monitor determines a weighting factor based on a rate of change of the difference between the first and second desired output parameter values.

7. (Original) The system of claim 1 wherein the control system monitor determines a weighting factor based on a ratio of the first and second parameter values and a rate of change of the difference between the first and second parameter values.

8. (Original) The system of claim 7 wherein the control system monitor integrates the weighted difference, and selects an alternative control strategy when the integrated weighted difference exceeds a corresponding threshold.

9. (Original) The system of claim 1 wherein the control system monitor determines the second desired output parameter value by estimating the second desired output parameter value based on inputs from a plurality of sensors.

10. (Original) The system of claim 9 wherein the first and second desired output parameter values represent engine brake torque and wherein the inputs from a plurality of sensors include a mass airflow input and a barometric pressure input.

11. (Original) The system of claim 10 wherein the barometric pressure input is generated by a manifold absolute pressure sensor.

12. (Original) The system of claim 10 wherein the control system monitor generates a barometric pressure input using an inference based on throttle position, engine speed, cam position and measured airflow.

13. (Original) The system of claim 1 wherein the control system monitor implements an alternative control strategy when a statistical calculation based on a history of the weighted difference exceeds a corresponding threshold.

14. (Original) A system for controlling a multiple cylinder internal combustion engine having an electronically controlled throttle valve to modulate intake air in response to a control system parameter, the system comprising:

a controller having control logic for determining a desired engine torque, determining an actual engine torque, determining a difference between the desired and actual engine torque, applying a weighting factor to the difference to generate a weighted difference, and selecting one of first and second engine control strategies based on the weighted difference.

15. (Original) The system of claim 14 further comprising:

at least one sensor for providing a sensor signal indicative of a current engine or ambient operating condition in communication with the controller, wherein the controller determines an actual engine torque by estimating actual engine torque based on the sensor signal.

16. (Original) The system of claim 15 wherein the at least one sensor comprises:

an engine speed sensor, a mass airflow sensor, and a pressure sensor in communication with the controller.

17. (Original) The system of claim 14 wherein the controller determines the actual engine torque using a monitor to measure engine brake torque.

18. (Original) The system of claim 14 wherein the controller retrieves the weighting factor from memory based on a percentage difference between the desired engine torque and actual engine torque and based on the rate of change of the difference.

19. (Original) The system of claim 18 wherein the desired engine torque and actual engine torque correspond to engine brake torque.

20. (Original) A computer readable storage medium having stored data representing instructions executable by a computer to control a multiple cylinder

internal combustion engine having an electronic throttle control system, the computer readable storage medium comprising:

instructions for determining a desired engine torque parameter for use by the electronic throttle control system;

instructions for monitoring the desired engine torque parameter by determining an actual engine torque based on current engine and ambient operating parameters;

instructions for determining a difference between the desired and actual engine torque;

instructions for determining a weighting factor based on the difference and a rate of change of the difference;

instructions for applying the weighting factor to the difference between the desired and actual engine torque to determine a weighted difference; and

instructions for controlling the engine in response to the weighted difference.